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ABSTRACT

The effects of Teams-Games-Tournament (TGT), an instructional technique involving student teams and learning games, and individualized instruction were compared in 39 students (in grades 7-9) experiencing problems with human relationships and academic tasks. Results confirmed hypotheses that TGT would exceed individualized instruction on social connectedness, pro-academic peer norms, frequency of peer tutoring, and percent of time on task. A 5-month followup showed former TGT students distributed among six new classes to still be interacting with their peers both on and off task more than control students. However, TGT students were off task more than control students at the time of the followup observations. (Author/SB)

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TEAMS-GAMES-TOURNAMENT: A STUDENT TEAM APPROACH TO TEACHING ADOLESCENTS WITH SPECIAL EMOTIONAL AND BEHAVIORAL NEEDS

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Introductory Statement

The Center for Social Organization of Schools has two primary objectives: to develop a scientific knowledge of how schools affect their students, and to use this knowledge to develop better school practices and organization.

The Center works through three programs to achieve its objectives. The Schools and Maturity program is studying the effects of school, family, and peer group experiences on the development of attitudes consistent with psychological maturity. The objectives are to formulate, assess, and research important educational goals other than traditional academic achievement. The program has developed the Psychosocial Maturity (PSM) Inventory for the assessment of adolescent social, individual, and interpersonal adequacy. The School Organization program is currently concerned with authority-control structures, task structures, reward systems, and peer group processes in schools. It has produced a large-scale study of the effects of open schools, has developed the Teams-Games-Tournament (TGT) instructional process for teaching various subjects in elementary and secondary schools, and has produced a computerized system for school-wide attendance monitoring. The Careers program (formerly Careers and Curricula) bases its work upon a theory of career development. It has developed a self-administered vocational guidance device and a self-directed career program to promote vocational development and to foster satisfying curricular decisions for high school, college, and adult populations.

This report, prepared by the School Organization Program, presents a study of the use of the Teams-Games-Tournament instructional process with adolescents with special emotional and behavioral needs.

Abstract

Structured interpersonal interaction around academic tasks would appear to be an important component of programs for children with special emotional and behavioral needs if such children are to learn appropriate social behaviors. However, the trend in special education has been toward increasing individualization of instruction, reducing opportunities for social learning. Teams-Games-Tournament (TGT), an instructional technique involving student teams and learning games, is proposed as an alternative classroom structure for children with special needs. TGT has been effectively used in many kinds of classrooms for normal children, and has had consistent positive effects on the "social connectedness," pro-academic peer norms, and academic performance of students. A study was conducted in which TGT and individualized instruction were compared in a school for adolescents of normal intelligence experiencing problems with human relationships and academic tasks. The results confirmed hypotheses that TGT would exceed individualized instruction on social connectedness, pro-academic peer norms, frequency of peer tutoring, and percent of time on task. A five-month followup showed former TGT students distributed among six new classes to still be interacting with their peers both on and off task more than control students. However, TGT students were off task more than control students at the time of the follow-up observations.

Acknowledgments

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INTRODUCTION

The potential importance of the peer group in the remediation of emotional and behavioral problems has been recognized for some time. The therapeutic milieu, group psychotherpy, and other technizues are based on the assumption that peer norms may be mobilized to support appropriate individual behavior, and on the recognition that many psychological problems stem from deficits in interpersonal experience and should therefore be remediated in an interpersonal context.

It would seem logical that schools for children with special emotional or motivational needs, which typically list remediation of deficiencies in interpersonal adjustment as a major institutional goal, would emphasize structured interpersonal interaction as a component in their programs. However, the recent trend in education of such children has been toward individualization of instruction, in which students perform their academic tasks essentially in isolation. While individualized, programmed instruction has had impressive impact on the academic behavior of adolescents with behaviorial problems (e.g., Cohen, 1972), primarily because it allows students to work at their own level and speed and offers immediate reinforcement for appropriate academic behavior, this technique would not appear to be ideal for learning of appropriate social behaviors.

The present paper describes a technique which includes some of the positive features of individualized instruction, but at the same time places students in structured interpersonal interaction of a kind likely to produce positive interpersonal bonds between students.

Definitions

The focus of the present paper is on the use of cooperative reward structures in the classroom. A reward structure constitutes the rules by which

rewards are distributed contingent on performance. In individualized instruction students are in an independent reward structure, as the probability that any student receives a reward depends only on the performance of the individual, independent of the performance of other students. In a competitive reward structure, effective performance by one person reduces the chance that another will be rewarded, as in chess, tennis, or "grading on the curve." A cooperative reward structure is one in which effective performance by one student increases the chance that another will be rewarded. Most team sports involve cooperative reward structures; for instance, effective performance by any player on a football team increases the other team members' probability of being rewarded (by winning). Cooperative reward structures may be further broken down into group competition, in which one team's performance is evaluated against the performance of another, and group contingencies, in which the group is evaluated against an objective standard.

Cooperative Reward Structures and Social Connectedness

There exists a substantial literature on the effects of cooperative reward structures on a variety of social dimensions. These dimensions will be referred to here as "social connectedness," the degree to which an individual feels attracted to others, and feels and acts a part of a valued group. Social connectedness variables that have appeared in the literature include interpersonal attraction, friendliness, mutual concern, positive group attraction, and helpfulness.

The evidence in the literature clearly indicates that cooperative reward structures have more positive effects on social connectedness variables than do either competitive or independent reward structures.

The effect of cooperative reward structure on mutual attraction has been widely reported, and seems to occur regardless of group size, task, age of subjects, and durations of experiments. Deutsch (1949), Dunn and Goldman (1966), Gottheil (1955), Grossack (1968), Jones and Vroom (1964), and Myers (1962) have

all found positive effects of cooperative reward structures on a variety of interpersonal dimensions. Crombag (1966), Mizuhara and Tamai (1952), Phillips and D'Amico (1956), and Raven and Eachus (1963) have found similar effects on cohesiveness and attraction to group. Deutsch (1949) showed groups in team competition to be more friendly and helpful than those in intragroup competition, and Dunn and Goldman (1966) observed a more positive emotional state and more positive, supportive statements in two cooperative reward structures than in an independent or competitive one.

This relationship holds regardless of the effect of reward structure on performance. For example, Julian and Perry (1967), who found individual competition more effective in increasing academic performance than either group competition or group contingencies, observed the opposite order of effects on social-emotional tone, willingness to work with the same team again, and individual feeling of responsibility.

In short, abundant evidence exists that cooperative setting is characterized by a positive, mutually supportive group climate. That this climate may result in feelings of increased social connectedness has also been well documented. A few studies have further demonstrated "quasi-therapeutic" effects of group competition. Julian, Bishop, and Fiedler (1966) and Fiedler (1967) demonstrated positive effects of group competition on self-esteem, lack of anxiety, self-rating as responsible and capable, and emotional adjustment in combat engineering companies, while Ayers (1962) showed similar effects in recreational rifle teams.

Although the research reported here was done with "normal" populations, the consistency of findings across settings suggests that cooperative reward structures may help increase the social connectedness of people with special emotional or behavioral needs, for whom this outcome is particularly important.

Cooperative Reward Structures and Task Performance

While the effects of cooperative reward structures on social connectedness are clear, the effects on task performance are not. Under some conditions, cooperative reward structures have been more effective than independent ones in motivating task performance; under other conditions the opposite relationship is observed. Slavin (1975d), in a review of the literature on reward structure and task performance, argues that the tasks which make up the bulk of school work most resemble tasks in which cooperative reward structures have been found to be less effective than independent and competitive ones. In fact, no studies involving pure cooperative reward structures in classrooms have shown gains in cognitive learning over competitive or independent structures.

However, a particular mixed cooperative and competitive reward structure has produced academic achievement gains over traditional instruction. This technique, Teams-Games-Tournament (TGT), has had positive effects on mathematics achievement in junior high schools (Edwards, DeVries, and Snyder, 1972; Edwards and DeVries, 1972; Edwards and Devries, 1974; Hulten and DeVries, 1975) and on language arts achievement of third graders (DeVries and Mescon, 1974; DeVries, Mescon, and Shackman, 1975). Positive effects have also been observed on the percent of time spent on task (DeVries, Edwards, and Wells, 1974a). At the same time, TGT has had positive effects on such social connectedness variables as number of students named as friends (DeVries, Edwards, and Wells, (1974b), cross-race and cross-sex helping and friendship choices (DeVries and Edwards, 1974; DeVries and Slavin, 1975), cohesiveness and mutual concern (DeVries and Edwards, 1973; Edwards and DeVries, 1974; DeVries, Edwards, and Wells, 1974b), and peer helping (DeVries and Edwards, 1973; Edwards and DeVries, 1974; DeVries, Edwards, and Wells, 1974a; DeVries and Mescon, 1974; DeVries, Mescon, and Shackman, 1975).

TGT has also had positive effects on classroom normative climate, the expectations students hold for each others' academic performance, and their reaction to other students who are effective performers. Edwards and DeVries (1974); DeVries, Edwards, and Wells (1974a); and Hulten and DeVries (1975) found positive effects of TGT on student expectations for fellow students' performance, while Slavin, DeVries, and Hulten (1975) documented a higher correlation between game performance and sociometric status gains in TGT than in a tournament-only treatment. Finally, TGT has had consistently positive effects on satisfaction with school and school work (Edwards and DeVries, 1973; DeVries and Edwards, 1973; Edwards and DeVries, 1974; DeVries, Edwards, and Wells, 1974a; Hulten and DeVries, 1975).

The TGT structure has students compete on simple academic games at three-person, ability homogeneous "tournament tables." Points earned at these tables become part of the score of the team to which the student belongs. Thus, a student competing at the "tournament table" is both working for his or her team (a cooperative reward structure), and competing against two other students (a competitive reward structure). Teammates have opportunities to help each other prepare for the tournaments, and a rotating procedure maintains the ability balance at each tournament table.

The simultaneous positive effects of TGT on academic achievement and social connectedness, unique in the literature, appear to be due to the combination of reward structures. Edwards and DeVries (1972) and Hulten and DeVries (1975) have shown that neither structure alone is as effective as the complete TGT structure.

TGT and Students With Special Needs

TGT resembles many individually programmed instruction techniques in that it has each student working at his or her own ability level, receiving immediate

reinforcement for appropriate academic performance. However, TGT has many features that make it particularly appropriate for use in schools for children with emotional and behavioral problems. First, the TGT team structure has been shown to increase the interpersonal ties between students, to make them concerned about one another and feel that they have friends and are liked themselves. Second, TGT has had positive effects on the normative climate of the classroom--the way in which students react to effective academic performance on the part of their classmates. This may have considerable importance for students with emotional and behavioral difficulties. Graubard (1969); Minuchin, Chamberlain, and Graubard (1967) and Zimmerman and Zimmerman (1962) have argued that im many special settings the peer reinforcement system is far more important to students than the adult-administered reinforcement structure, and that in such settings peer norms typically oppose academic performance. A treatment such as TGT which has been able to change the normative climate of the classroom thus may be particularly useful in special settings. Third, TGT has had these positive effects on social connectedness and peer norms while at the same time increasing academic performance as much or more than traditional instruction, and while increasing the percentage of time students spend on task. That is, TGT does not require a shift in emphasis from cognitive to social growth, but allows both ends to be achieved simultaneously.

The Present Study

The present study extends the use of TGT to a population of adolescents who have been identified as having problems with academic performance and human relationships. The positive effects of TGT on social connectedness, normative climate, and time on task are expected to transfer to this population, or stated formally:

Hypothesis 1: Students in a TGT class will experience greater increases in "social connectedness" (i.e. mutual attraction, helpfulness, and interaction on task) than will students in a

control class;

Hypothesis 2: Students in a TGT class will be more likely to choose as friends peers who are effective academic performers than will students in a control class;

Hypothesis 3: Students in a TGT class will be on task a greater proportion of their class time than will students in a control class.

METHOD

Setting

The study was conducted at Mark Twain School, a school in the suburbs of Washington, D.C. Mark Twain is a public school for children of normal intelligence who have been identified as "having difficulties with academic tasks, human relationships, and/or self-organization."[1/] It contains a lower, middle, and upper school. The present study took place in the middle school, which has approximately 100 students in grades 7-9. Most students at Mark Twain stay for two years, and then return to regular junior or senior high schools. The classes are small, often ten students or less per teacher, and nearly all of the classes extensively use individualized instruction. Instead of grades, students receive daily "task" and "behavior" ratings in each class, loosely based on the percentage of class time the student spent "on task" and behaving appropriately.

The study took place in the social studies classes at Mark Twain Middle School. These classes met four times per week for forty minutes. The two middle school social studies teachers taught both classes as a team.

1/ From a brochure describing Mark Twain School published by the Montgomery County Public Schools, Rockville, Maryland.

Subjects

The subjects were 39 students (M=31, F=8; white=36, black=3) at Mark Twain middle school. Twelve subjects were seventh graders; 22 were eighth graders, and 5 were ninth graders.

Students are admitted to Mark Twain only if they are of "normal intelligence" and have parents who are willing to cooperate with the school, and they come from largely middle and upper-middle class families from a wealthy suburban county. Thus, they may not be representative of adolescents in many programs for children with special emotional and behavioral needs. The students range from very withdrawn to highly disruptive.

Design

The present study assigned two classes to a simple experimental vs. control group design. A third treatment, a modification of TGT, was also implemented, but is not reported here.[1/] Students were randomly assigned to the classes, stratified on three levels of IQ obtained from school records. Nineteen students were assigned to the control class, and twenty to the TGT class.

The study covered a period of twelve weeks in fall, 1974. Both classes involved in the study were engaged in an American History unit. For the first six weeks the classes studied the U. S. Constitution, and for the second six weeks the Civil War.

Independent Variables

Control

Students in the control condition experienced the usual middle school social studies curriculum. They worked on individual tasks, and were allowed to complete activities from a list provided at the beginning of the study in any order.

1/ This modification involved assignments of students to practice dyads within their teams and face-to-face competition between teams as units. The modification failed, primarily because of the coercion involved in the practice dyad assignments. See Slavin, 1975 (c) for a description of the full study including the modification.

Cooperative work was neither encouraged nor discouraged, and students often worked together voluntarily. The activities included worksheets, questions based on readings and filmstrips, crosswork puzzles and similar individual learning activities. Teachers acted as classroom managers and instructional resources, walking around the room to help individual students and helping students find and use instructional materials.

TGT

TGT was implemented as follows:

Teams: The students were assigned to four-to-five-person teams so that all levels of academic ability (as determined by a composite of IQ score and U. S. Constitution pretest scores) were represented on each team. In addition, an attempt was made to equalize the number of females and blacks on each team. Teams were assigned letter-names and sat in adjacent seats.

Games: The games used were made by the teachers, and consisted of cards containing multiple-choice or true-false questions on the subject matter. Each student in turn would pick a card, read the question on it, and answer the question. If the student could not answer, the other students would get a chance. The first to give the correct answer kept the card (answer sheets were provided to each tournament table). The winner at each table was the player with the greatest number of cards at the end of the tournament.

Tournament: The students played as representatives of their teams at three-person tournament tables once each week. The top scorer at a table earned six points for the team; the middle scorer four points, and the low scorer two points. Absentees received zero points. The high scorer was moved "up" to the next table for the following tournament, where play was likely to be more difficult, while the low scorer was moved "down." A weekly "tournament newsletter" announced table winners and rewarded team performance. The newsletter was distributed to all students, and prominently displayed both in the social studies room and

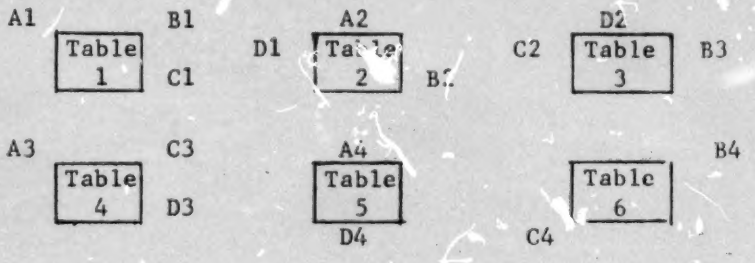
throughout the middle school.

Practice: The team members met the day before the tournament and were given a practice game, consisting of questions that would be in the final tournament plus other questions. These were used to practice for the tournament. The teams could organize as they wished to practice the game material.

Figure 1, below, depicts the TGT tournament structure:

Figure 1: Schematic Representation of TGT Tournament Structure

TEAMS:	A	B	C	D
STUDENTS:	A1	B1	C1	D1
	A2	B2	C2	D2
	A3	B3	C3	D3
	A4	B4	C4	D4



Possible Arrangement of Students and Tables, TGT

In Figure 1, the designations for students (A1, A2, etc.) indicate the ability levels of the students. Thus, A1, B1, C1, and D1 are the high-ability students in the class. As represented above, each student competes against students of approximately equal ability level. The movement of students after the tournaments maintains this ability balance. For instance, if A3 is the high scorer at table 4, he or she would compete in the next tournament at table 3, while the low scorer at table 3 would compete at table 4, and so on at the other tables.

The TGT and control classes differed in both reward structure and task structure. TGT students received recognition for both individual and team performance, while control students received individual feedback only. Also, TGT students worked in teams and competed at tournament tables, while control students worked individually and did not compete. Finally, while TGT and control students both covered the same material, the control students could do so in any order, while the TGT students covered it in a specified order.

Dependent Variables

Classroom Observation

Beginning in the fourth week of the study, and continuing over the course of the project every two weeks, week-long systematic observations were made of all classes. An experienced observer was trained to an inter-observer reliability of .85 to observe the classes, using an adaptation of the FOISB--Flexible Observation Instrument for Student Behavior (Slavin, 1975a). Half of the students in each class (10 students) were randomly selected for observation. The observer watched each student for five seconds, recorded his or her behavior, and then moved on to the next student in a prescribed order. Reliability checks were made at random throughout the study. The observation categories were:

A. On Task (working alone on task assigned)

B. Peer Task (working with a peer on task assigned)

C. Not on Task (not on task during a time when task behavior is clearly expected. Students were scored Individual Not on Task if alone, or Peer Not on Task if interacting with a peer.)

D. Interacting with Staff

E. Conversation (engaged in conversation with peers during a period appropriate for conversation)

F. Other (only possible during non-task periods)

After every observation some category was recorded, along with a notation of whether the student's behavior was (a) appropriate or inappropriate; (b) if peer directed, friendly or unfriendly; (c) with peers, with staff, or alone.

A total of fifteen observation days over four weeks were obtained for each class (one class day was missing due to a vacation). Each class was observed every day during an observation week. Classes were observed for thirty minutes--from five minutes after the beginning of the class period to five minutes before the end. Reliability of the observation scale, as determined by the percent of

interobserver agreement on observation categories, ranged from 84% to 93%, with a mean of 89%.

Sociometric Measures

Before and after the twelve-week experimental period, students completed a sociometric questionnaire containing the following items:

A. Who are your friends in this class?

B. Who have helped you with your classwork?

C. Whom have you helped with their classwork?

D. With whom would you most like to do classwork?

E. Who would you like to know better?

Students were provided with a list of the names of students in their class and were allowed to make as many choices as they wished.

RESULTS

Classroom Observation

Three observation categories were analyzed for treatment differences: peer task, total on task (individual on task plus peer task), and peer not on task. The analysis was done by means of a Chi square contingency table with one degree of freedom, using Yates' correction for continuity. The category frequencies were analyzed as proportions of total task opportunities, the sum of total on task and total not on task, thus ignoring observation units in which task behavior was not expected (such as time spent interacting with staff). Table 1 summarizes the results of the Chi square analyses.

Table 1

Descriptive Statistics
and Chi Square Analysis,
Classroom Observation

Category	X^2	p <	Direction
Peer Task/ Total Task Opportunities	545.07	.001	TGT > Control
Total on Task/ Total Task Opportunities	4.84	.05	TGT > Control
Peer Not on Task/ Total Task Opportunities	1.92	n.s.	

Category	TGT		Control	
	No. of Observations	%	No. of Observations	%
Individual on Task	333	27.8	832	69.7
Peer on Task	679	56.8	136	11.4
(Total on Task)	(1012)	(84.6)	(968)	(81.1)
Individual Not on Task	62	5.2	124	10.4
Peer Not on Task	122	10.2	101	8.5
(Total Not on Task)	(184)	(15.4)	(225)	(18.9)
Total Task Opportunities	1196	100.0	1193	100.0

As indicated by Table 1, TGT students spent a far greater proportion of their task opportunities engaging in peer task behavior than did control students (56.8% vs. 11.4%; $\chi^2 = 545.07$, $p < .001$). In addition, TGT students were on task a greater proportion of the time than were control students (84.6% vs. 81.1%; $\chi^2 = 4.84$, $p < .05$), supporting the expectation expressed in Hypothesis 3. If these percentages of time on task seem high for a school for adolescents who have behavioral and emotional problems, it should be recalled that they are percentages of task opportunities, excluding such times as transitions, free

or unstructured periods, time spent interacting with staff, etc. Also, the first and last five minutes of the class periods were not observed. Thus, the observation intervals categorized as "task opportunities" represent the portion of the class period in which task expectations are most unambiguous, and on-task behavior is most likely to occur.

No formal hypotheses were made about the third observation category analyzed in Table 1, Peer Not On Task, but this category is important for educational practice. Because of the high proportion of time spent in peer interaction in the TGT class, peer inappropriate behavior might be expected to be high in this treatment. However, Table 1 shows that this was not the case. While TGT students did engage in a somewhat higher proportion of peer inappropriate behavior than did control students (10.2% of task opportunities vs. 8.5%), this difference is not significant ($\chi^2 = 1.92$, n.s.).

Sociometric Measures

The five sociometric measures were analyzed using the University of Miami Multivariate Analysis of Variance (MANOVA) Program (Clyde, 1969). The multivariate analysis of variance produces a test of the statistical significance of the entire equation relating all dependent variables with the treatment vector and the covariates. It is used here to guard against false disconfirmation of the null hypothesis due to the measurement of a large number of variables on the same population. (See Bock and Haggard, 1968, for a discussion of multivariate analysis of variance.) The test statistic is Wilk's Lambda, which, if significant, permits the meaningful interpretation of univariate F tests.

The analysis for the sociometric measures employed five criteria, the five posttests, and five covariates, the pretests. Degrees of freedom for the multivariate analysis were 4 and 26; for each of the univariate F tests they were 1 and 29.

Table 2, below, presents the MANOVA results and descriptive statistics for the sociometric measures.

Table 2

Descriptive Statistics and
Multivariate Analysis of Variance,
Sociometric Measures

Variable	F	p<	Direction
Wilk's Lambda (.671)	2.17	.10	
Friends	6.60	.02	TGT > Control
Would like to work with	5.23	.03	TGT > Control
Would like to know better	2.91	.10	TGT > Control
Helped you	<1	n.s.	
You helped	2.75	n.s.	

Variable	TGT(N=16)		Control(N=17)	
	Mean	SD	Mean	SD
Friends	7.38	2.31	6.24	2.66
Would like to work with	3.19	2.01	2.18	1.51
Would like to know better	2.31	1.54	1.71	1.36
Helped you	3.19	1.80	3.41	1.87
You helped	3.69	1.49	3.35	1.73

As indicated in Table 2, the Wilk's Lambda test of the multivariate analysis of variance is marginally significant ($F=2.17$; $d.f.=4,26$; $p<.10$), permitting substantive interpretation of the univariate F tests for each dependent variable. Significant differences between TGT and control were found on two sociometric measures, responses to "Who are your friends in this class?" ($F=6.60$; $d.f.=1, 29$; $p<.02$) and "With whom would you like to do classwork?" ($F=5.23$, $d.f.=1,29$, $p<.03$). A third question, "Who would you like to know better?" produces marginally significant treatment-control differences ($F=2.91$; $d.f.=1,29$; $p<.10$). All of these comparisons show a higher level of peer mutual

attraction in the TGT class than in the control class, supporting the expectation expressed in Hypothesis 1 that the TGT class would experience greater social connectedness than would the control class.

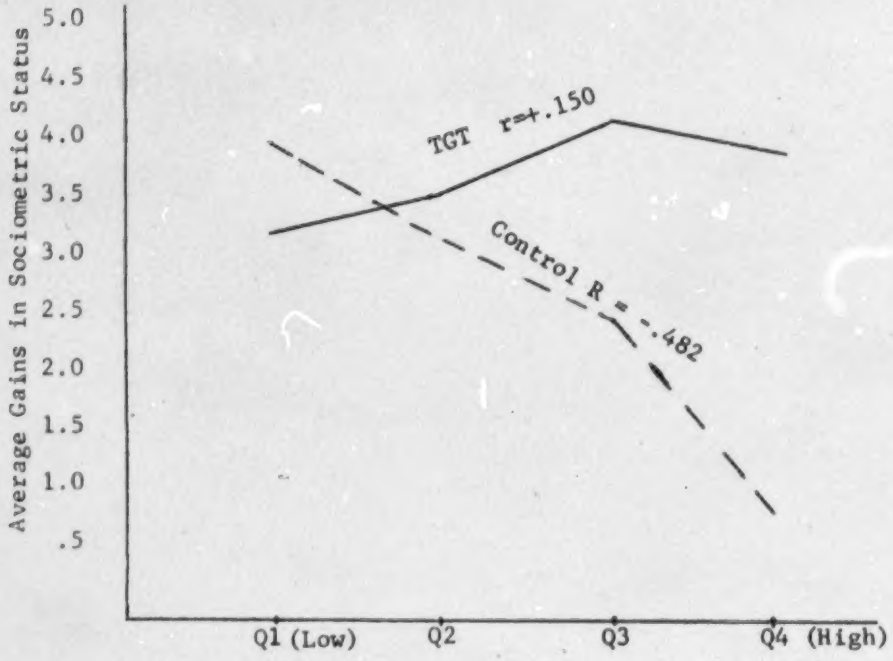
On the other hand, no differences between TGT and control were recorded for the task-related sociometric questions, "Who has helped you with your classwork?" ($F=1$; d.f.=1,29; n.s.) and "Who have you helped with their classwork?" ($F=2.75$; d.f.=1,29; n.s.) This result is surprising in light of the enormous difference between the TGT and control classes in the observed frequency of peer helping on learning tasks. The finding of no differences on these items is probably due to the fact that the classroom observation recorded frequency of peer tutoring, while the sociometric instrument asks for the number of students with whom a student worked. In TGT, cross-team tutoring was not frequently observed. As a result, the students in TGT, even though they worked much more frequently with their peers, may have actually worked with a small number of their classmates, explaining the lack of observed treatment effects on the task-related sociometric items.

Peer Norms

To assess the effect of TGT on peer norms regarding academic achievement, attention was focused on the consequences in terms of sociometric status of being a high performer. It was assumed that in a class that supports academic performance, high academic performers would experience greater gains in sociometric status than would low performers. In classes where peer norms opposed academic performance it was assumed that the opposite would be the case--high academic performance could result in losses in sociometric status. This means of assessing the normative climates of classrooms is similar to methods used for this purpose by Coleman (1960) and by Slavin, DeVries, and Hulten (1975).

To study the effects of the TGT and control treatments on peer academic norms in the present study, the relationship between individual posttest scores on a treatment-specific social test and gains in sociometric status was examined. The measure of sociometric status was the number of times a student was named on the question, "Who are your friends?" Figure 2, below, depicts the relationship between these variables in the two classes:

Figure 2: Academic Achievement and Sociometric Status



As shown in Figure 2, an inverse relationship existed in the control class between academic performance and sociometric status gains. High performing students gained few friends over the course of the study, while low performing students gained many. The overall correlation between academic performance and sociometric status gain is -.482. In the TGT class, high performing students gained as much or greater sociometric status as low performing students -- the correlation between academic performance and sociometric status gain was a low but positive +.150. This outcome replicates the results obtained by Slavin et al. (1975), who found a greater correlation between game success and sociometric status gains in a team contingency than in an individual contingency. It also supports Hypothesis 2 -- peers will be more likely to choose their academically effective classmates as friends in a TGT class than in a control class.

FOLLOWUP[1]

Five months after the conclusion of the study, a followup of the classroom observation was conducted. All the students in the middle school had been completely reassigned to new classes 3½ months earlier, a month and a half after the study ended. The followup asked whether the effects observed in the TGT class on frequency of peer interaction, on-task behavior, and peer inappropriate behavior would be maintained in different classes after a long time interval. That is, has the TGT treatment had a lasting effect on the social connectedness and task behavior of students?

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[1]The procedures and results described here were first presented by Checkon (1975). Dr. Checkon is the Supervisor of Research and Evaluation at Mark Twain.

Procedure

This second wave of observations was done by the same observer who had done the first wave, using the same observation instrument and procedures. The observation was done in the social studies classes taught by the teachers who had participated in the study. An attempt was made to obtain at least 100 observations on each student; students with less than sixty observations were dropped from the analysis. Of the twenty students originally observed, eight TGT and nine control students met this criterion. Each student was observed on a minimum of four different school days.

The reassignment of students spread the former experimental students over six new classes, as follows:

Distribution of TGT and Control Students
In New Classes

	New Class #					
	1	2	3	4	5	6
Number of TGT Students	1	3	2	2	0	0
Number of Control Students	3	1	2	0	1	2
Approximate Total Number of Students	20	20	20	20	10	10

Results

The analysis of the classroom observation data, presented in Table 3, followed the same procedure as the original analysis:

Table 3

Followup of Classroom Observation

Category	X^2	$p <$	Direction
Peer Task/ Total Task Opportunities	22.29	.001	TGT > Control
Total on Task/ Total Task Opportunities	6.05	.05	Control > TGT
Peer Not on Task/ Total Task Opportunities	4.35	.05	TGT > Control

Category	TGT		Control	
	# of Observations	%	# of Observations	%
Indivdiual on Task	345	89.6	566	97.6
Peer on Task	20	5.2	2	0.3
(Total on Task)	(365)	(94.8)	(568)	(97.9)
Individual Not on Task	7	1.8	5	0.9
Peer Not on Task	13	3.4	7	1.2
(Total Not on Task)	(20)	(5.2)	(12)	(2.1)
Total Task Opportunities	385	100.0	580	100.0

It is clear from Table 3 that students who experienced TGT were still interacting with each other on task behavior more than students who had been in the control class (X^2=22.29; d.f.=1; $p<.001$) five months after the conclusion of the study, even though the TGT students were no longer together in the same class. This interaction extended to inappropriate, non-task behavior as well as to task behavior, resulting in a significantly greater proportion of time spent in inappropriate behavior with peers among TGT students than among control students (X^2=4.35; d.f.=1; $p<.05$). This greater proportion of inappropriate peer-directed behavior accounts for the advantage of the control students in overall time on task (X^2=6.05; d.f.=1; $p<.05$); the difference between TGT and

control on individual not-on-task behavior is nonsignificant (X^2=1.04; d.f.=1, n.s.). Summing the time spent in appropriate and inappropriate peer interaction, it is clear that former TGT students spent a far greater proportion of their time interacting with peers than did control students, 8.6% of task opportunities for TGT vs. 1.5% for control. This difference, of course, is highly significant (X^2=25.72; d.f.=1; $p < .001$).

The reversal of the direction of the treatment effect on percent of time spent on task may be due to a change in the contingencies in force in the six new classes. Mark Twain School makes a very careful attempt to prepare students for reentry into regular schools, and classes at Mark Twain are made more like classes in regular schools as the time to return approaches. That is, behavior that would have been acceptable at Mark Twain but less acceptable at regular schools would no longer be tolerated. As a result, behavior scored as "peer off task" may have been the same as behavior that would have been recorded as appropriate during the experimental period.

DISCUSSION

The data presented in this paper generally support the hypotheses that TGT students would experience greater social connectedness, more pro-academic norms, and greater time on task than would control students. During the experimental period, TGT students interacted with their peers far more than did control students, and then continued to do so five months after the conclusion of the study. However, the increased tendency of the TGT students to interact with each other evidently led them to continue to interact five months later in a setting in which some of that interaction was inappropriate, resulting in a greater proportion of time spent off task by former TGT students than by former control students.

The greater increases in numbers of classmates chosen as friends and potential workmates in the TGT class than in the control class are particularly important outcomes for the students involved. This finding indicates that a change in the task and reward structure of the classroom can change important interpersonal perceptions of adolescents who have problems in interpersonal adjustment.

Finally, the particular structure used in the present study apparently can change the normative climate of the classroom from one in which achievement reduces status among peers to one in which achievement increases status. The consequences of this change in students' norms regarding academic performance may be profound. Coleman (1960) and others have described the opposing contincies facing students -- a pro-academic reward system administered by the school and by parents by means of grades, and an anti-academic system administered by peers by means of according low status to high achievers. The data in the present study indicate that the anti-academic peer norms in the control group were strong -- there was a correlation of -.482 between academic achievement and sociometric status gains among these students. If the control group may be seen as representative of the school in general, this degree of anti-academic peer norms could be a major, largely unrecognized problem in the education of students who have educational and emotional difficulties. However, the present paper offers one possible solution to this problem, the use of learning teams in classrooms for students with such diffuculties.

The implications of the present research are great. The trend in special education has been toward individualization of instruction. This may be defensible on cognitive-learning grounds, but such instruction may increase the social barriers between students. The present paper describes a technique which teaches as well as individualized instruction (see Slavin, 1975c), but which

also has major effects on the quantity and quality of interpersonal interaction, effects which appear to last long after the conclusion of the intervention. Educators and researchers should continue to explore the uses of TGT and other student team interventions that may positively affect the social growth of students with special needs.

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